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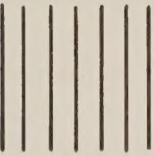
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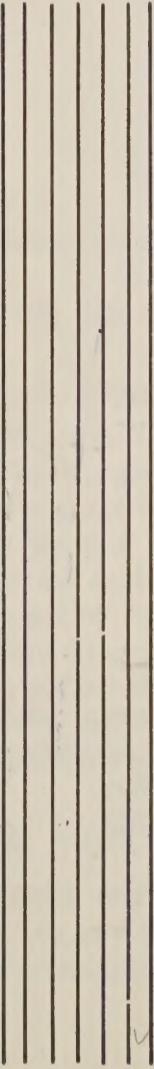
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Equine
Piroplasmosis



2021
Progress Report
Fiscal Year 1971

ANIMAL AND PLANT HEALTH INSPECTION SERVICE
U. S. DEPARTMENT OF AGRICULTURE

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Prepared by
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EQUINE PIROPLASMOSIS PROGRESS REPORT - FISCAL YEAR 1971

INTRODUCTION

The first confirmed case of equine piroplasmosis (EP) reported in the United States was found in Dade County, Fla., in August 1961. Since that time, EP has been reported from Puerto Rico, the U.S. Virgin Islands (St. Croix), in several counties in southern Florida, and through the tracing of movements of horses to Arizona, Arkansas, California, Colorado, Connecticut, Georgia, Illinois, Indiana, Kentucky, Minnesota, Mississippi, Nebraska, New Jersey, New York, North Carolina, South Carolina, South Dakota, Tennessee, Texas, and Virginia. Fiscal year 1971 reports are reflected in figure 1.

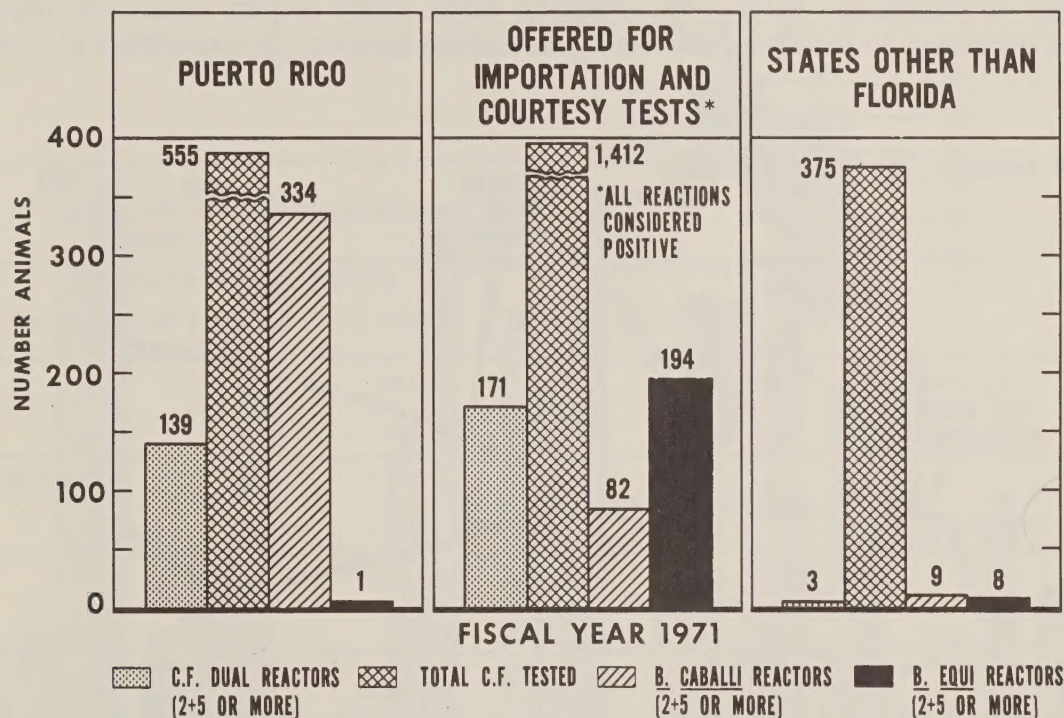


Figure 1.—Equine Piroplasmosis summary.

When EP appeared in 1961, the State of Florida and the Agricultural Research Service of the U.S. Department of Agriculture entered into a cooperative effort to control the spread of EP and to learn more about this malady believed new to the continental United States. Activities referred to in this report were carried out in cooperation with the following: Florida Department of Agriculture, Florida Racing Commission, University of Florida, Puerto Rico Department of Agriculture and Commerce, the U.S. Department of Defense (Veterinary Corps - Fort Buchanan, Puerto Rico), U.S. Virgin Islands Department of Agriculture and Recreation, and private veterinary practitioners.

All references to EP in this report relate to the syndrome caused by *Babesia caballi* except where noted as the type caused by *Babesia equi*.

EQUINE PIROPLASMOSIS IN FLORIDA

During fiscal years 1962-64 and the first part of fiscal year 1965, blood film examinations were used in Florida to aid in the diagnosis of EP. Field activities were usually limited to clinically suspicious animals or herds.

During the last part of fiscal year 1965 and fiscal years 1966-69, the complement-fixation (CF) test was used in most instances in lieu of the blood film examination.¹ The CF test is a practical and accurate diagnostic tool.

During fiscal years 1967-71, CF tests applied to certain animals gave dual reactions (fig. 2); that is, serum from these animals reacted positively with both *B. caballi* and *B. equi* antigens. Two explanations given for these dual reactions are as follows: (1) lack of specificity of the antigen; and (2) dual (both *B. caballi* and *B. equi*) infection in the animals. Dual infections in which an animal have been found to harbor both organisms has been conclusively demonstrated to exist in Florida and on St. Croix.

Control measures in certain counties in southern Florida consist of the following: (1) Application of tickicides to horses and other Equidae in herds known to be affected with EP, also herds adjacent to or having received animals from known EP-affected herds; (2) application of tickicides² to animals in equine herds where owners voluntarily request tickicidal treatment, in certain instances at horse auction markets; (3) quarantines of known

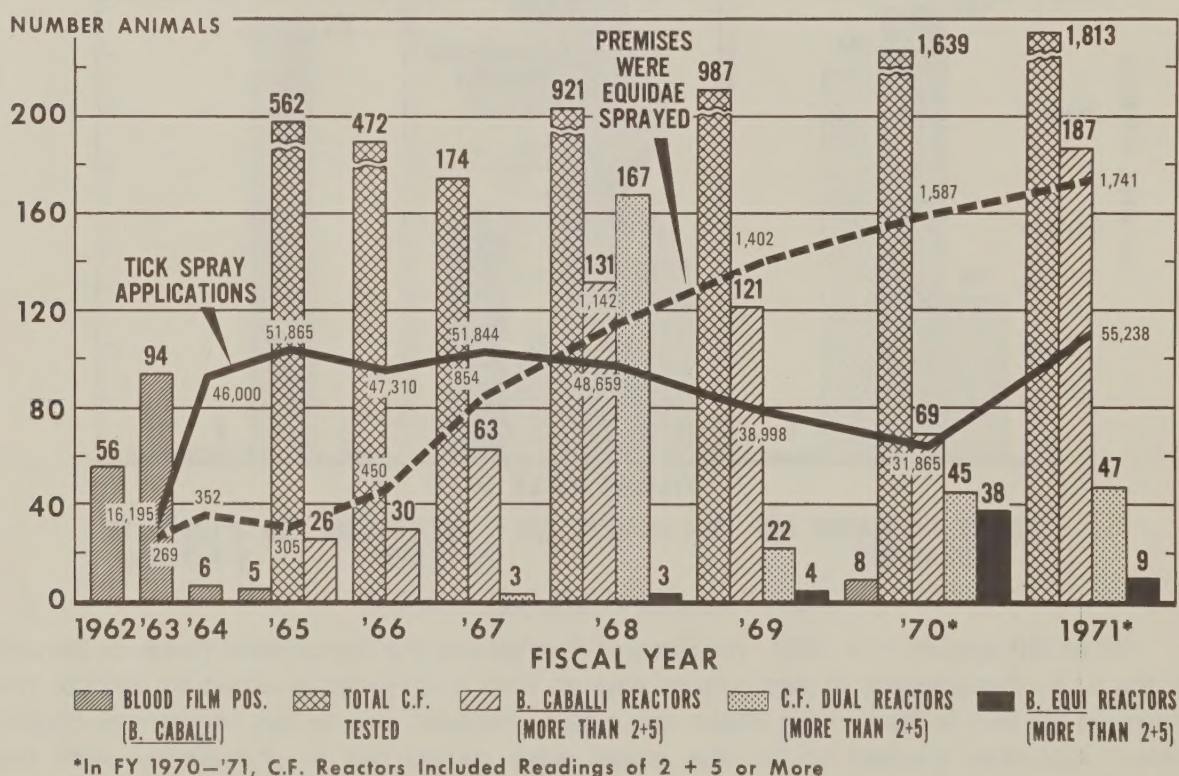


Figure 2.—Equine Piroplasmosis summary—Florida.

¹ For background information of demonstration of babesia on blood films, see "Diagnosis of Equine Piroplasmosis," in Equine Piroplasmosis (EP) Progress Report-Fiscal Year 1968, Anim. Health Div., Agr. Res. Serv., U.S. Dept. Agr. unnumbered pub. pp. 3, 1968.

² For more details see section in this report "Summarization of Ticks on Equidae in Florida."

affected animals and of premises where tropical horse ticks (*Dermacentor nitens*) are found in combination with known affected animals; (4) tracing of movements of horses and other Equidae from known EP-affected herds; (5) inspecting traced animals for ticks, clinically examining all animals in these herds for signs of EP, and then applying the CF test to all animals in these herds; and (6) chemotherapy directed at rendering horses and other Equidae previously classified as affected as being incapable of transmitting the disease.

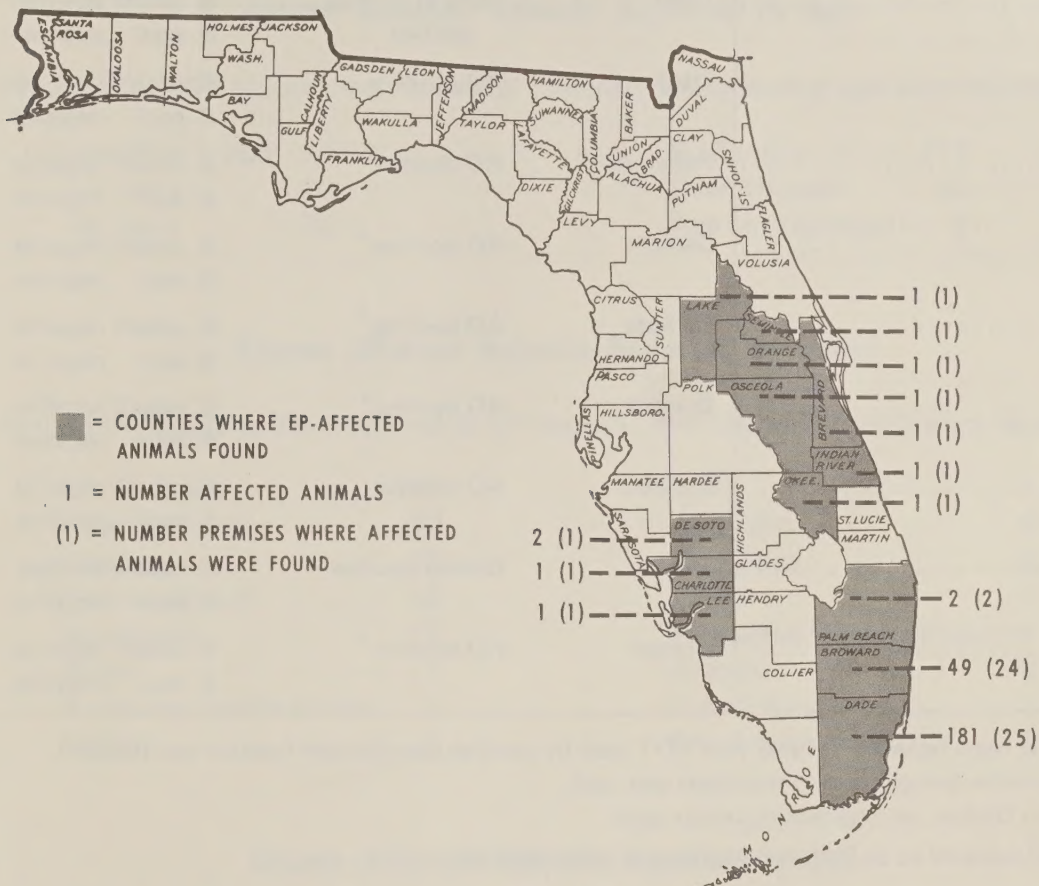


Figure 3.

Summary of Known EP-Affected Animals in Florida According to Geographical Locations - Fiscal Year 1971

County	Affected Equidae	Premises
	Number	Number
Brevard	1	1
Broward	49	24
Charlotte	1	1
Dade	181	25
De Soto	2	1
Indian River	1	1
Lake	1	1
Lee	1	1
Okeechobee	1	1
Orange	1	1
Osceola	1	1
Palm Beach	2	2
Seminole	1	1
Total	243	61

Methods of Confirming Diagnosis¹

Tattoo identification	County	Blood film stain and result of examination ^{2 3}	Complement-fixation test results
OP134	Dade	AO and Giemsa positive	<i>B. caballi</i> positive <i>B. equi</i> positive
OP138	Dade	AO positive	<i>B. caballi</i> positive <i>B. equi</i> negative
OP158	Indian River	AO positive*	<i>B. caballi</i> negative <i>B. equi</i> negative
OP232	Osceola	AO positive*	<i>B. caballi</i> negative <i>B. equi</i> negative
OP237	De Soto	AO positive*	<i>B. caballi</i> negative <i>B. equi</i> negative
IP51	Brevard	AO positive*	<i>B. caballi</i> negative <i>B. equi</i> negative
IP56	Broward	AO positive	<i>B. caballi</i> negative <i>B. equi</i> positive
IP91	Dade	Giemsa positive	<i>B. caballi</i> positive <i>B. equi</i> negative
IP112	Orange	AO positive*	<i>B. caballi</i> negative <i>B. equi</i> negative

¹ All other cases reported in fiscal year 1971 were by positive complement-fixation test reaction.

² AO - acridine orange staining technique was used.

³ Giemsa - Giemsa staining technique was used.

*Material believed to be Babesia parasites was demonstrated.

We believe that the nuclear material in equine blood can be confused with Babesia bodies when the acridine orange (AO) staining technique is used. This could account for the disparity between the results reported from blood film examination and the complement fixation results.

Known Affected Animals Reported by Age

Among the 243 Equidae classified as EP reactors, the following ages were represented:

Less than 1 year	- 14	5-10 years	- 112
1-2 years	- 20	Over 10 years	- 66
3-5 years	- 28	Age not reported	- 3

Known Affected Animals Reported by Breed

Among the 243 Equidae classified as EP reactors, the following breeds were represented:

Mixed Breed	- 141	Pinto	- 4
Quarter Horse	- 30	Palomino	- 6
Shetland	- 17	Paso Fino	- 4
Thoroughbred	- 16	Zebra	- 1
Appaloosa	- 12	Tennessee Walking Horse	- 5
Welsh	- 1	Arabian	- 1
American Saddle Horse	- 1	Cuban Walker	- 1
Morgan	- 1	Breed not reported	- 3

Known Affected Animals Reported by Sex

Among the 243 Equidae identified as EP reactors in fiscal year 1971, the sex is as follows:

Geldings	- 117
Mares	- 113
Stallions	- 12
Sex not reported	- 1

Length of Time on Premises Before Disclosure of EP

Among the 243 Equidae classed as reactors for EP, the following were located on the premises where they were found as reactors for—

60 days or less	- 35	1 to 2 years	- 72
61 days to 120 days	- 8	Over 2 years	- 73
121 days to 365 days	- 51	Not reported	- 4

EQUINE PIROPLASMOSIS IN PUERTO RICO

In August 1964 the first case of EP reported in Puerto Rico was found in a mare at the riding stable at Fort Buchanan. The diagnosis was confirmed by blood film examination.

During fiscal year 1971, among 555 horses CF-tested in Puerto Rico (fig. 1), 334 reacted positively for *B. caballi*; 139 for both *B. caballi* and *B. equi* (dual reactors); and 1 for *B. equi*. Thus, among 555 horses tested, 474 (85.4 percent) reacted positively with one or both types of Babesia antigen.

Animals tested on this island generally fell into three categories: Privately-owned pleasure horses kept at military bases; Paso Fino horses (fine pacing horses native to Puerto Rico); and a few Thoroughbreds. The privately owned and Paso Fino horses have been shown to be commonly infested with *Dermacentor nitens* ticks.

E.P. - C.F. Test Summary - States Other Than Florida - Fiscal Year 1971 (July 1, 1970 - June 30, 1971)

State	Animals tested	Reason for tests *See key below	Herds tested	Reactors disclosed *See key below			Animals negative	Disposition of reactors
				<i>B. caballi</i>	<i>B. equi</i>	Dual		
	Number		Number				Number	
Alabama	2	2-D	1	0	0	0	2	
Arizona	6	2-D, 1-T, 2-E, 1-O	4	0	1-D	0	5	Dead.
California	122	11-O, 111-T	18	1-T	3-T	0	118	Quarantined.
Colorado	29	29-T	5	2-T	0	0	27	<i>Babesi</i> treatment and quarantine released.
Connecticut	1	1-O	1	1-T	0	0	0	<i>Babesi</i> treatment, remains under quarantine.
Delaware	1	1-D	1	0	0	0	1	
Georgia	18	5-D, 13-T	9	0	1-T	1-T	16	Dead.
Illinois	3	3-T	1	0	2-T	0	1	Quarantined.
Indiana	3	3-D	3	1-D (Zebra)	0	0	2	Retained in zoo.
Kentucky	14	4-D, 1-O, 9-E	5	1-O	0	1-D	12	1 - <i>Babesi</i> treatment. 1 - Dead dual.
Louisiana	2	2-D	1	0	0	0	2	
Maryland	7	6-D, 1-O	5	0	0	0	7	
Michigan	5	5-T	1	0	0	0	5	
Minnesota	7	7-R	1	1-R	1-R	0	5	Quarantined.
Mississippi	1	1-D	1	0	0	0	1	
Missouri	1	1-D	1	0	0	0	1	
New Hampshire	1	1-D	1	0	0	0	1	
New Jersey	18	14-D, 4-O	14	0	0	0	18	
New York	89	55-E, 2-O, 32-D	22	1-D	0	0	88	Dead.
North Carolina	1	1-D	1	0	0	0	1	
Oklahoma	2	2-D	2	0	0	0	2	
Oregon	1	1-D	1	0	0	0	1	
Pennsylvania	1	1-D	1	0	0	0	1	
South Carolina	13	13-D	5	0	0	0	13	
Tennessee	1	1-D	1	0	0	0	1	
Texas	13	4-T, 9-D	9	0	0	1-T	12	On farm, not quarantined.
Virginia	1	1-R	1	1-R	0	0	0	<i>Babesi</i> treatment and quarantine released.
Wisconsin	12	11-O, 1-D	2	0	0	0	12	
Total	375	103-D, 166-T, 25-R, 66-E, 15-O	119	9	8	3	355	

*Key: D = Diagnostic test. T = Tested as a follow-up to tracing. R = Tested for breed registration purposes. E = Exposed animals. O = Other categories.

**Equine Piroplasmosis, CF Results of Equidae Tested for Importation
and Courtesy Tests - Fiscal Year 1971**

Country	Animals tested	<i>B. caballi</i> positive	<i>B. equi</i> positive	Dual reactors	Animals negative
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Argentina	71	0	21	1	49
Australia	51	0	0	0	51
Austria	10	0	0	0	10
Bermuda	1	0	0	0	1
Brazil	22	5	5	6	6
Chile	164	0	51	2	111
Colombia	58	2	15	37	4
Dominican Republic	20	1	9	6	4
England	16	0	1	0	15
France	35	0	8	0	27
Germany	25	0	0	0	25
Guatemala	1	0	1	0	0
Italy	3	0	0	0	3
Jamaica	2	0	1	0	1
Mexico (nonstrays)	86	0	5	1	80
(strays)	141	0	26	5	110
Nepal	2	0	0	0	2
New Zealand	95	0	0	0	95
Okinawa	1	0	0	0	1
Panama (Survey = 297 head)	372	72	41	109	150
Peru	71	0	1	0	70
Poland	4	0	0	0	4
Portugal	3	0	1	1	1
Spain	3	0	2	0	1
Sweden	1	0	0	0	1
Switzerland	1	0	0	0	1
Uruguay	9	0	1	2	6
Venezuela	39	2	3	0	34
West Germany	1	0	0	0	1
Other countries	104	0	2	1	101
(Test chart not clear)					
Total	1,412	82	194	171	965

SUMMARIZATION OF TICKS ON EQUIDAE IN FLORIDA

General Tickicidal Treatments

Equine piroplasmosis is generally recognized to be a tick-borne disease. Horses in southern Florida have been found to be infested with several ticks; namely, the tropical horse tick, *Dermacentor nitens*; the Gulf Coast tick, *Amblyomma maculatum*; the black-legged tick, *Ixodes scapularis*; and, to a lesser degree, the lone star tick, *Amblyomma americanum*; and the American dog tick, *Dermacentor variabilis*.

The attack against EP is directed against *D. nitens* infesting Equidae in Florida. Notably, the great predominance of the infesting ticks were tropical horse ticks and they exhibit a predilection for the ears and false nostrils. In all confirmed cases of EP (*B. caballi*), *D. nitens* are present.

Treatments were (1) application every 21 days of 0.50 percent toxaphene over the whole animal, and (2) application of 1 percent lindane in cottonseed oil to the ears and false nostrils. Since May 1, 1970, dioxathion (Delnav) has replaced toxaphene as the tickicide of choice used at a concentration of 0.15 as a whole body spray and 1 percent in cottonseed oil applied to the ears and false nostrils. Many horse premises in southern Florida consist of 2- to 5-acre pastures, some of which contain only one or two animals. This dispersion of horses, and as many of these animals are considered pets, made dipping against ticks impractical. Thus, high-pressure spraying was chosen as the method of treatment.

During fiscal year 1971 collections of tropical horse ticks (*D. nitens*) in Florida were 137 collections principally from horses and other Equidae and a few cattle; no *D. nitens* were collected from other hosts.

The numbers of horse premises and tick-spray applications during fiscal years 1963-71 were as follows:

Fiscal year	Premises	Tick-spray applications
	<i>Number</i>	<i>Number</i>
1963 ¹	269	16,195
1964	352	46,000
1965	305	51,865
1966	450	47,310
1967	854	51,844
1968	1,142	48,659
1969	1,402	38,998
1970	1,587	31,865
1971	1,741	55,238

¹ Spraying was initiated in October 1962; therefore, a full year is not represented.

Ticks Collected in Florida During Fiscal Year 1971

Six maps (figs. 4-9) show counties in Florida where various ticks were collected, principally from horses and cattle; however, ticks were also collected from dogs, feral animals, and occasionally from other sources such as clothing. Figure 9 shows total ticks collected in various counties in Florida.

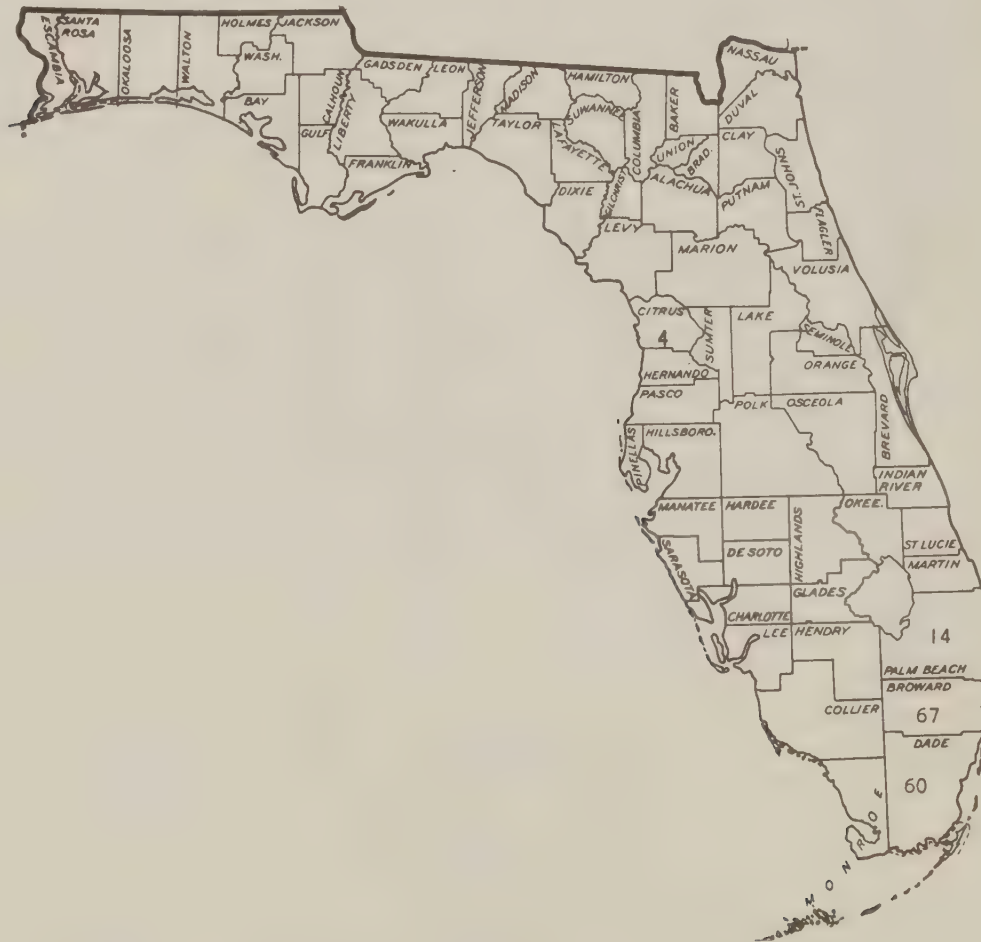


Figure 4.—*DERMACENTOR NITENS* (Tropical Horse Tick).

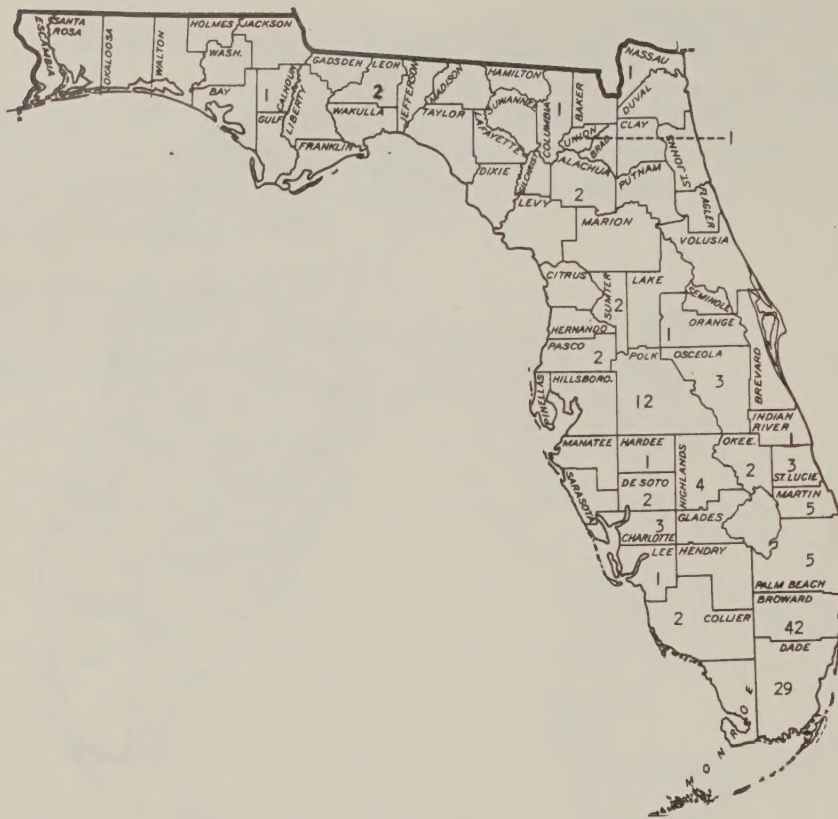


Figure 7.—*AMBLYOMMA MACULATUM* (Gulf Coast Tick).

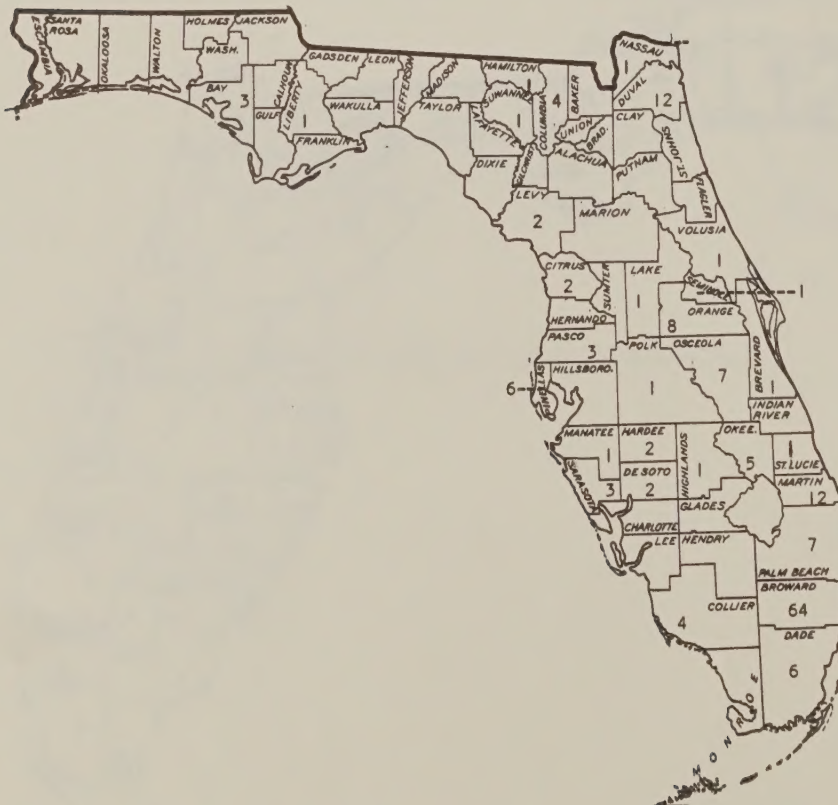


Figure 8.—*DERMACENTOR VARIABILIS* (American Dog Tick).

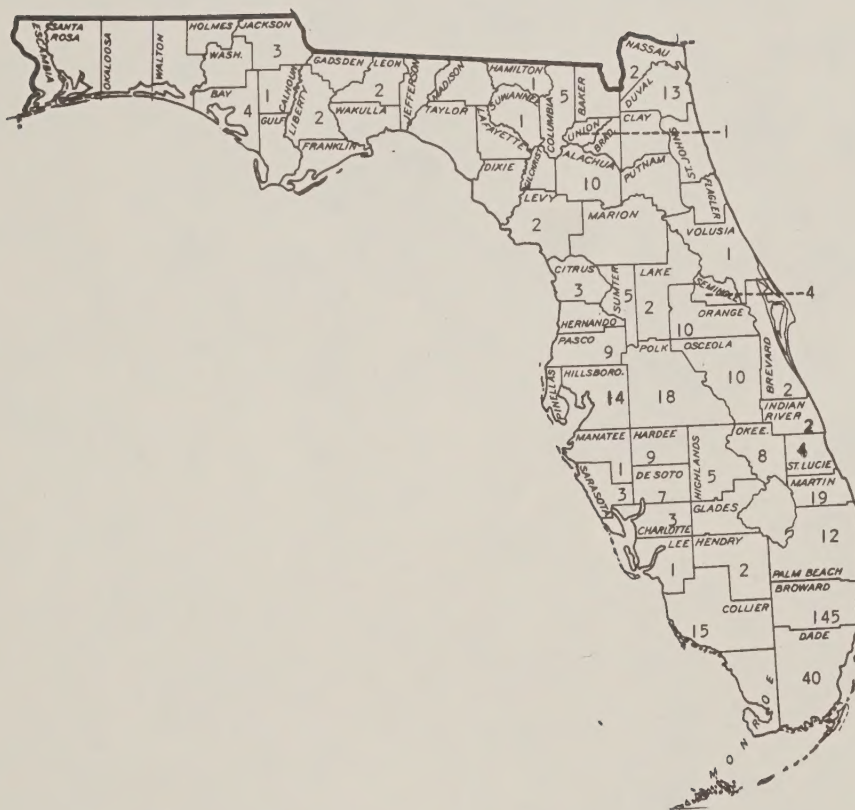


Figure 9.—Total number of ticks collected in fiscal year 1971.

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